NASA Procedural Requirements

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COMPLIANCE IS MANDATORY

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Subject: NASA Program and Project Management Processes and Requirements

Responsible Office: Office of the Chief Engineer

APPENDIX E. Key Document Content

This appendix establishes the content for the following basic commitment documents associated with programs/projects:

E.1 Formulation Authorization Document.

E.2 Program Commitment Agreement.

E.3 Program Plan.

E.4 Project Plan.

The format may be tailored, but all applicable content will be addressed.

E.1 Formulation Authorization Document

Formulation Authorization Document

(Provide a title for the candidate program and designate a short title or proposed acronym in parenthesis,

if appropriate.)

_____ _____

Enterprise Associate Administrator Date

(Note: This can also be used for the authorization of project formulation to be consistent with the Program Plan).

Figure E-1.1 Formulation Authorization Document Title Page

FORMULATION AUTHORIZATION DOCUMENT
(PROGRAM TITLE)

PURPOSE

Identify the purpose of the program whose goals and objectives are referenced in the Enterprise Strategic Plan. This need is independent of any particular technological solution and is stated in terms of functional capabilities.

AUTHORITY

Clearly describe the NASA organizational structure for managing the formulation process from the EAA to the NASA Center project managers, as applicable. Include lines of authority, coordination, and reporting.

TERMS OF REFERENCE

Describe the level or scope of work to be accomplished in the formulation study, goals and objectives, any cost targets or constraints, the time available to do the studies, and any other constraints.

INTERNAL PARTICIPANTS

Identify other Enterprises and Centers to be involved in the activity, their scope of work, and any constraints related to their efforts (e.g., the program must be co-funded by a different Enterprise).

EXTERNAL PARTICIPANTS

Identify participation external to NASA to be involved in the activity, their scope of work, and any constraints related to their efforts (e.g., the program must be co-funded by the external participant).

FUNDING

Identify, by fiscal year, the funding that will be committed for formulation.

REVIEWS

Describe the reviews, including independent reviews, required during the Formulation subprocess.

E.2 Program Commitment Agreement

Program Commitment Agreement

(Provide a title for the candidate program and designate a short title or proposed acronym in parenthesis, if appropriate.)

It is the responsibility of each of the signing parties to notify the other in the event that a commitment cannot be met and to initiate the timely renegotiations of the terms of this agreement.

_____ _____
Enterprise Associate Administrator Date

_____ _____
Administrator Date

Figure E-2.1 Program Commitment Agreement Title Page

PROGRAM COMMITMENT AGREEMENT
(PROGRAM TITLE)

PROGRAM OBJECTIVES

Identify the broad program objectives. Describe the program's relationship to the Enterprise Strategic Plan. Convey the public good of the program to the taxpayer, stated in a way that can be understood by the average citizen.

PROGRAM OVERVIEW

Provide a broad description of the strategy to achieve the above-mentioned objectives. Relationships with external organizations, other agencies, or international partners should be addressed if achievement of the program objectives i dependent on their performance.

PROGRAM AUTHORITY

Clearly describe the NASA organizational structure for managing the program and projects from the EAA to the NASA Center project managers. Include lines of authority and reporting, Center(s) responsibilities, the GPMC(s) for the oversi of the program and its projects, and the approving official for new projects.

TECHNICAL PERFORMANCE COMMITMENT

Summarize the technical requirements needed to achieve the program objectives. If the objectives include a technical performance target in addition to a threshold requirement (e.g., as for an applied technology research program), the commitment could be stated as a range.

SCHEDULE COMMITMENT

Identify the following key target milestones for each project in the program: Start of Formulation, Start of Implementatio Launch or its equivalent for ground based projects; and end of prime operations. Add an end of data analysis milestone appropriate. Other milestones or time periods can be added if appropriate for a specific program, such as:

a. Date for a vehicle first flight or first element launch; b. Target date or time frame for the NAR; c. Time period allowed for development; d. Minimum period of operation of vehicles; e. The time frame in which validated science results will be archived for use by the general science community or when user services would be made available to the user community.

COST COMMITMENT

Provide the maximum value for the Life Cycle Cost (LCC) for the program including all projects in Formulation and Implementation. The actual cost plan is developed during the annual POP process and this document shall reference tl

form 300B or equivalent for the budget year. The LCC given shall include all costs necessary to perform the program, including, in addition to the standard project activities, facilities costs, launch vehicles, tracking, and mission operations and data analysis.

ACQUISITION STRATEGY

Provide a brief statement of the proposed acquisition strategy for major elements.

HIGH RISK AREAS

Identify the areas of highest risk for the program (covering safety, technical, cost, or schedule issues) in which failure m result in serious consequences. This section should identify, where possible, the specific risk drivers, such as high-risk technologie , s upon which the program is dependent.

INTERNAL AGREEMENTS

If the program is dependent on other NASA activities outside of the EAA's control, identify the required support and list any formal agreements required.

EXTERNAL AGREEMENTS

Explain the involvement of external organizations, other agencies, or international partners including a brief overview of the external support necessary to meet the program objectives. Include an identification of the commitments being mad by the external organizations, other agencies, or international partners and a listing of the specific agreements to be concluded. Any unique considerations affecting implementation of NPD 7120.4 policies and the processes of this document necessitated by the external involvement should be clearly identified.

INDEPENDENT REVIEWS

Specify the type of independent reviews, (e.g., NAR) that will be performed during the life cycle of the program, and whether or not the program will have a dedicated Independent Review Team (IRT).

TAILORING

Identify those requirements for which the approach to compliance has been tailored consistent with program characteristics such as scope, complexity, visibility, cost, safety, and acceptable risk. Provide rationale for such tailorin

PCA ACTIVITIES LOG

Provide and maintain a log of all PCA activities, depicting revisions that reflect all deviations to the original PCA. This lo includes the information shown in Figure E-2.2 and may be supplemented with an attached addendum for each change describing the change. The PCA should be updated to add approved projects or whenever substantial change makes it necessary.

Date	Event	Change	Addendum	Cancellation Review Req'd	EAA Signature	Administrator Signature
dd/mm/94	Revalidation	None	N/A	No		
dd/mm/95	Revalidation	None	N/A	No		
dd/mm/96	POP 96 Reduced FY97 by $15M	Deleted Real-Time Data Products to Users	Ref. #1	No		

Figure E-2.2. Sample Program Commitment Agreement Activities Log.

E.3 Program Plan

Program Plan

(Provide a title for the candidate program and designate a short title or proposed acronym in parenthesis, if appropriate.)

Enterprise Associate Administrator	Date
Center Director (as appropriate)	Date
Program Manager	Date

Figure E-3.1Program Plan Title Page

PROGRAM PLAN
(PROGRAM TITLE)

INTRODUCTION

Briefly state the background of the program and its current status, including the results of formulation activities, decisions, and documentation.

PROGRAM OBJECTIVES

State program objectives, performance goals, and performance indicators, and their relationship to NASA program goals as set forth in the NASA Strategic Plan. Performance goals should be expressed in an objective, quantifiable, and measurable form.

CUSTOMER DEFINITION AND ADVOCACY

State the main customers of the program (e.g., PI, science community, technology community, public, education community, Enterprise Sponsor) and the process to be used to ensure customer advocacy.

PROGRAM AUTHORITY AND MANAGEMENT STRUCTURE

Identify the location (Center or Headquarters) where the Program Manager resides and each Center's responsibilities, the GPMC(s) for oversight of the projects within the program, and the approving official for Projects.

Briefly describe the major components of the program and the way they will be integrated, including the way the program will relate to other institutions within NASA as well as outside of NASA.Identify the responsibilities of each NASA Center as they relate to their respective requirement allocations referenced in PROGRAM REQUIREMENTS below. Describe the overall architecture of the program and the process by which new Projects are formulated and approved.

a. Organization. Describe the NASA organizational structure for managing the program and projects from the EAA to the NASA Center project managers. Include clear lines of authority and reporting; illustrate the organization graphically

b. Responsibilities. Clearly define management responsibilities of the EAA, the Program Manager, the Center Director, and the Project Manager, including the authority of these. Indicate their responsibilities for developing, concurring, and approving principal program documents, such as the formulation authorization, the Program Plan, Project Plan, RFP's and other contract-related documents, reports associated with major reviews, and other key activities.

PROGRAM REQUIREMENTS

Document the program requirements, including performance requirements, and success criteria, in an objective, quantifiable and measurable form. For multiple projects within a program, describe the way in which the program requirements will be allocated to the respective projects. , The approving authority is required to document objectives and requirements for each project as they are formulated. If the mission characteristics indicate a greater emphasis is necessary on maintaining either technical, cost, or schedule, then this section should also identify which is more important to be considered, (e.g. it should address if the mission is cost capped, or if schedule is paramount, as for a planetary mission, or if it is critical to accomplish all of the technical objectives.)

PROGRAM SCHEDULE

Provide a schedule of pro , gram activities and events covering the life of the program; include all applicable events, such as approval dates for entry into subprocesses, approval dates for major program and project documents, instrument selection dates, dates of major project reviews, launch dates (or equivalent system "delivery" dates), and other Administrator or EAA decisions. Include all PCA milestones.

PROGRAM RESOURCES

For each participating NASA Center, identify yearly New Obligation Authority (NOA) estimates for system development and operations, facility construction, institutional support, and management. Civil service workforce levels should be included.

CONTROLS

Describe the process by which project requirements are validated for compliance with the program requirements. Describe the process for controlling changes. Describe the process for updating the PCA as a result of any changes. Indicate key program parameters (cost, schedule, and technical) which will require Administrator, EAA, or Program Manager approval for change. Identify the APA and reserves management strategy and approval authority.

RELATIONSHIPS TO OTHER PROGRAMS AND AGREEMENTS

Describe the way the program will relate to other institutions within NASA, e.g., crosscutting technology efforts, space communications and launch services. List the internal agreements necessary for program success and projected dates of approval. This list should include those agreements which are concluded with the authority of the Program Manager,

and reference those agreements concluded with the authority of the EAA.

Describe the way the program will relate to entities outside of NASA, e.g., interagency or international. List the external agreements necessary for program success and projected dates of approval. This list should include those agreements, which are concluded with the authority of the Program Manager, and reference those agreements concluded with the authority of the EAA and/or Administrator.

ACQUISITION STRATEGY

Briefly describe the acquisition approach to be applied at the program level toward each project. The respective roles, responsibilities, and relationships between the government and its contractors, vendors, and/or partners are addressed, including a description of integration and surveillance responsibilities.

TECHNOLOGY ASSESSMENT

Identify the NASA crosscutting or other technology thrusts to be utilized by the projects. Identify those technologies the program expects to mature during the life of the program. Briefly describe how the technologies will be developed and infused. Describe how and when the program will evaluate the feasibility, readiness, cost, risk, and benefits of the new technologies.

COMMERCIALIZATION OPPORTUNITIES

Identify commercialization opportunities and the approach to be employed to identify others during the life of the program.

DATA MANAGEMENT

Program data management planning for science missions, is provided as a section of this Program Plan or as a separate document, to address the data being captured by NASA science missions and its availability. It contains plans for data rights and services to the science community, addressing issues which are community-wide and often require tradeoffs between project/Center interests and the science community.

SAFETY AND MISSION SUCCESS

Safety and mission success planning is provided either as a section of this Program Plan or as a separate document. Address the activities and steps to be taken to ensure safety of the public, the NASA astronauts and pilots, the NASA workforce, and NASA's high value equipment and property. Address both hardware and software aspects of the program, and identify all activities such as safety, reliability and maintainability, quality assurance, environmental related design and test including orbital debris mitigation, program surveillance, and failure reporting/resolution which are used to ensure the success and safety of the mission

RISK MANAGEMENT

Summarize the risk management approach to be used for the program, including appropriate actions to mitigate risk and program de-scope plans. Also identify primary risks consistent with Paragraph 4.3.2.d. A stand-alone risk management plan is also developed and includes the content shown in NPR 8000.4, Risk Management Procedural Requirements.

ENVIRONMENTAL IMPACT

Identify the documentation and schedule of events associated with environmental compliance considerations (NEPA and other requirements). This may include an Environmental Assessment or an Environmental Impact Statement. See Paragraph 4.6.5.

LOGISTICS

Describe the program's logistics requirements.

TEST AND VERIFICATION

Describe the program's approach to test and verification for the assurance of program success. Address requirements for hardware and software verification and validation as well as software independent verification and validation.

REVIEWS

List the reviews that the program will conduct, including independent reviews, in response to EAA and GPMC requirements.

Termination Review Criteria

Provide the technical, scientific, schedule, cost, and other criteria, which will be utilized to consider whether a termination review should be conducted.

TAILORING

Identify those requirements for which the approach to compliance has been tailored consistent with program characteristics such as scope, complexity, visibility, cost, safety, and acceptable risk. Provide rationale for such tailoring.

CHANGE LOG

Changes to the Program Plan should be documented in a change log.

E.4 Project Plan

Project Plan

(Provide a title for the candidate program and designate a short title or proposed acronym in parenthesis,

if appropriate.)

_____	_____
Enterprise Associate Administrator	Date
_____	_____
Center Director (as appropriate)	Date
_____	_____
Program Manager	Date

Figure E-4.1 Project Plan Title Page

PROJECT PLAN
FOREWORD

INTRODUCTION

The project is identified by an officially approved title, NASA program, PCA, and/or unique project number. A brief general history and summary are given, including the project's purpose, goals, overall approach, and timeframe. For multiple NASA Center projects, describe the NASA Center's project in relationship to the other participating NASA Centers.

OBJECTIVES

State the specific project objectives, performance goals, and their relationship to the program objectives and goals. Performance goals should be expressed in an objective, quantifiable, and measurable form.

CUSTOMER DEFINITION AND ADVOCACY

State the main customers of the project (e.g., PI, science community, technology community, public, education community, Program and Enterprise sponsor) and the process to be used to ensure customer advocacy.

PROJECT AUTHORITY

Identify the Center where the Project Manager resides and other Center's responsibilities , and the GPMC responsible for the oversight of the project. Provide a chain of accountability and decision path that outlines the roles and responsibilities of the Project Manager, Program Manager, Center Director, and other authorities as required.

MANAGEMENT

Describe the project management structure, including organization and responsibilities, its integration into the program management structure, and NASA Center participation. Identify all significant interfaces with other contributing organizations. Identify specific management tools to support management in planning and controlling the project. Describe any use of special boards and committees. Address any requirement for a NASA Resident Office including duties and authority.

PROJECT REQUIREMENTS

Document the project requirements, including performance requirements and success criteria, as a flow down from the program requirements. This includes the allocation of these requirements and success criteria among the systems to be developed, both hardware and software.

TECHNICAL SUMMARY

Present a technical description of the project. This includes the systems to be developed (hardware and software), use of the SI measurement system, facilities, flight plans, operations and logistics concepts, and planned mission results analysis and reporting.

a. System(s).
b. System operations concept.
c. System constraints.
d. Ground systems and support.
e. Facilities.
f. Mission results analysis and reporting.
g. End of life cycle.

LOGISTICS

Describe the project's logistics requirements, for example, spares, shipping and handling equipment, transportation, user manuals, simulators, training and training materials, and supporting personnel.

SCHEDULES

Document the project's master schedule for all major events, independent reviews, and other activities throughout the life cycle of the project. Include approval dates for principal project documentation, life-cycle transitions, major reviews, program-controlled milestones, and significant contract milestones. Identify lower level schedules to be developed and maintained.

RESOURCES

a. Funding Requirements. Present a funding requirements chart that includes the same elements as for the acquisition summary. Indicate the NOA in real-year dollars for the prior, current, and remaining fiscal years. The displayed detail should cover major elements of cost (typically reflecting at least at the second level of the WBS or

its equivalent).

b. Institutional Requirements. Present the institutional requirements (use of or development of facilities, workforce) for the entire project throughout its life cycle. Include civil service workforce requirements on the providing organizations for the prior (e.g., actuals), current, and remaining years.

CONTROLS

All technical performance, cost, or schedule parameters specified as requiring approval by the Administrator, the EAA, CD, or Program Manager, should be identified. Examples include funding by year, success criteria, program requirements, project objectives, management structure, and major program/project documentation. Identify the thresholds associated with each parameter that could cause a change request. Describe the process by which project requirements are validated for compliance with program requirements. Describe the process for controlling changes to these requirements.

IMPLEMENTATION APPROACH

The implementation approach of the project is provided (e.g., in-house, NASA Center, contractor prime), as well as a project WBS.

a. Implementation approach.
b. Project summary WBS.

ACQUISITION SUMMARY

Provide summary information on procurement items, such as element (engineering design study, hardware and software development, mission and data operations support); type of procurement (competitive, AO for instruments); type of contract (cost-reimbursable, fixed-price); source (institutional, contractor, other Government organizations); procuring activity; and surveillance.

PROGRAM/PROJECT DEPENDENCIES

Other NAS , A, U.S. agency, and international activities, studies, and agreements are summarized with emphasis on their effect on the program.

a. Related activities and studies, e.g., space communications, launch services, crosscutting technology.
b. Related non-NASA activities and studies.

AGREEMENTS

List all agreements necessary for project success and the projected dates of approval. Include all agreements concluded with the authority of the Project Manager and reference agreements concluded with the authority of the Program Manager and above.

a. NASA agreements, e.g., space communications, launch services.
b. Non-NASA agreements.
(1) Domestic.
(2) International.

SAFETY AND MISSION SUCCESS

Safety and mission success planning is developed either as a section of this Project Plan or as a separate document. Address the activities and steps to be taken to ensure safety of the public, the NASA astronauts and pilots, the NASA workforce, and NASA's high-value equipment and property. Address both hardware and software aspects of the project, and identify all activities, such as safety, reliability and maintainability, quality assurance, environmental related design and test including orbital debris mitigation, project surveillance, and failure reporting/resolution which are used to ensure the success and safety of the mission.

RISK MANAGEMENT

Summarize the risk management approach to be used for the project, including appropriate project de-scope plans. Also identify primary risks consistent with paragraph 4.3.2.d. A stand-alone Risk Management Plan is also developed and includes the content shown in NPR 8000.4, Risk Management Procedural Requirements.

ENVIRONMENTAL IMPACT

Identify the documentation and schedule of events associated with environmental compliance considerations (NEPA and other requirements). This may include an EA or an Environmental Impact Statement, (see paragraph 4.6.5).

TEST AND VERIFICATION

Describe the project's approach to test and verification for the assurance of project success. This should address requirements for hardware and software verification and validation, as well as software IV&V.

TECHNOLOGY ASSESSMENT

Identify the NASA crosscutting or other technology thrusts to be utilized by the project. Identify those technologies the project expects to mature during the life of the program. Briefly describe how the technologies will be developed and infused. Describe how and when the project will evaluate the feasibility, readiness, cost, risk, and benefits of the new technologies.

COMMERCIALIZATION

Identify near-term opportunities for commercialization. Describe the methods to be used to identify additional opportunities throughout the project's life cycle.

REVIEWS

Provide the names, purposes, content, and timing of all reviews. Explain the reporting requirements for program and project reviews.

Termination Review Criteria

Provide the technical, scientific, schedule, cost, and other criteria, which will be utilized to consider a termination review.

TAILORING

Identify those requirements for which the approach to compliance has been tailored consistent with project characteristics such as scope, complexity, visibility, cost, safety, and acceptable risk. Provide rationale for such tailoring.

CHANGE LOG

Changes to the Project Plan should be documented in a change log.

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